

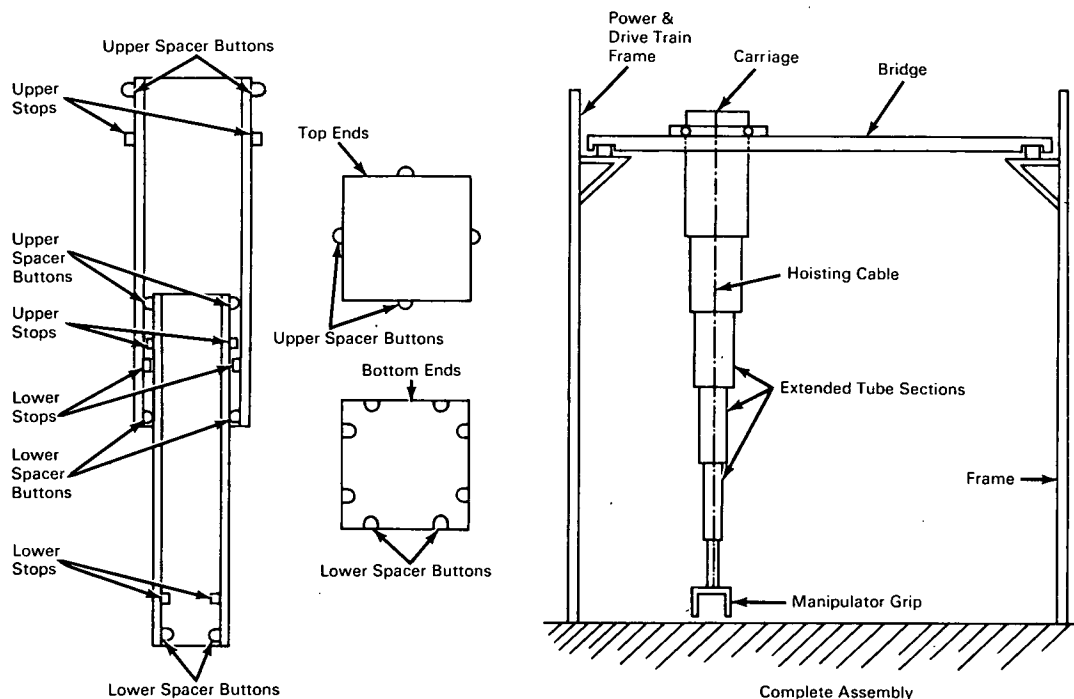


AEC-NASA TECH BRIEF



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Square Tubing Reduces Cost of Telescoping Bridge Crane Hoist



The problem:

To reduce the cost of a bridge crane hoist by eliminating expensive splined telescoping tubes from the construction.

The solution:

Use standard square tubing in a telescoping arrangement to keep the vertical member rigid. Because surface tolerances of square tubing need not be as accurate as the tubing used previously, and because no spline is necessary, the square tubing is significantly less expensive than splined telescoping tubes.

How it's done:

The sections of square tubing vary in width so that each section will fit inside the next largest. The length of each section and the number of sections used depends on the maximum lifting height desired.

A hardened steel spacer button with a curved surface and proper shimming is press fitted to the top end of each external face of each square tube. Two similar spacer buttons are attached side by side near the bottom end of each internal face of each tube. Thus, when each tube is fitted inside the next largest, it will be centered, and there will be a three-point

(continued overleaf)

contact between all corresponding faces. This three-point contact eliminates the need for absolutely true surfaces.

Below the upper spacer button on the external faces of each tube, but still well above the center of that section, steel stops are welded in place. Similar stops are welded just above the bottom spacers on the inside faces of each section and in line vertically with the upper stop. Therefore, when the tubes are extended in line, they remain partially inside one another, and because of the spacer buttons, they stay in line with respect to each other.

The manipulator hoisting cable is attached to the top end of the lower tube section, and the upper tubing section is welded to the hoisting carriage so that the telescoping tubing is held rigidly vertical. Therefore, when an object is lifted free of the ground and the carriage or bridge is moved, no swinging will occur.

Notes:

1. In an application to an approximately 4-ft-high carriage, 10-in., 8-in., 6-in., 5-in., and 4-in. square sections of tubing were used. When extended there was an 8-inch overlap of consecutive sections.

2. Inquiries concerning this innovation may be directed to:

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Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

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U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
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